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This study develops a model for measuring productivity in a large scale systems acquisition and development agency within the Department of Defense using the Analytic Hierarchy Process (AHP). Fourteen objective factors were identified and weighted to develop the relative importance of the primary determinants of production. Initial validity data are presented. The result is a model which provides senior management with objective, analytically derived indexes upon which to make manpower decisions.

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PRODUCTIVITY MEASUREMENT: AN ANALYTIC APPROACH

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September 1983

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This Technical Report has been reviewed and is approved for publication.

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INTRODUCTION

General Overview

The purpose of this paper is to document the efforts of a major Department of Defense (DoD) development and acquisition agency to develop a workable, valid productivity indicator upon which to base critical manpower decisions. This particular agency produces highly complex weapon systems that require years of development and acquisition time and therefore require a relatively sophisticated objective measure upon which to measure relative requirements across differing system acquisition offices.

During the development phase, the agency selects contractors to produce prototypes for test and evaluation and later for manufacturing the quantities the DoD orders for inventory. During development, a program manager oversees all the activities of contracting, testing, and procuring the munitions. The tasks of development may involve coordinating with 20 or more organizations within and outside the DoD. Such a large management effort requires a large amount of manpower of a variety of skills. The workload is uneven over a period of time, which often exceeds five years. The total manpower depends upon the stage in the development cycle, unprogrammed difficulties, and priority of the program.

The measurement of productivity is not a simple process, and is particularly difficult within many military settings wherein the ratio of inputs to outputs is not always practical (Cook, 1982). Thorn (1981, p. 31) correctly asserts that "outputs frequently cannot be measured in quantitative terms and that multiple objectives of a disparate nature preclude the use of a single measure." In this case, weapon acquisition and development does result in a measurable end product. However, these products are usually complex, time consuming, and dependent upon decisions

beyond the control of local management. It is therefore important to provide some intermediate indicator of effectiveness.

If such a measure were available, the performance of manpower overall (or by breakout of categories) could be determined and changes made in aggregate manpower which would improve the overall productivity of the organization. The following describes one attempt to construct and validate a productivity measure for the purpose of aggregate manpower planning. It is important to note that this use of the analytical hierarchy process to construct a productivity measure is a unique extension of Saaty's (1982) method for evaluating weights of multiattribute models.

Literature

In complex problems such as manpower planning in large organizations, simple procedures as decompositions are desirable to aid the decision maker. Theoretical multiattribute utility models (MAU) have been developed which hold promise of helping the decision maker in practice. Keeney and Raiffa (1976) summarized the practical procedures for developing MAU models.

The simplest utility function for n attributes is the linear additive model:

$$u(x) = \sum_{i=1}^{n} k_i u_i(x_i),$$

where x = n-vector of attribute values $x_1, x_2, \ldots, x_n$,

$u(x)$ = utility of the vector x,

k_i = weighting of attribute X_i, $i=1,1,\ldots,n$,

x_i = a value of the attribute X_i,

$u_i(x_i)$ = marginal utility of x_i.

Fishburn (1965) proved that the additive utility model for two attributes, say X and Y, is applicable if and only if X and Y are additive independent. Attributes X and Y are additive independent if the paired preference comparison of any two lotteries, defined by two joint probability distributions on X and Y, depends only on their marginal probability distributions.

Fishburn extended the two attribute result for additive independence to the general n attribute case. The utility function takes the additive form if and only if the set of attributes $(X_1, X_2, \ldots, X_n)$ is additive independent, that is, if and only if preference over all lotteries on $(X_1, X_2, \ldots, X_n)$ depend only upon their marginal probability distributions.

The multilinear utility function is applicable only when the attributes are jointly utility independent. A set of attributes is defined to be jointly utility independent if and only if each of the attributes is utility independent of its complement (the remaining attributes).

If the attributes $(X_1, X_2, \ldots, X_n)$ are mutually utility independent, then the utility function u(x) takes the multiplicative form.

$$ku(\bar{x}) + 1 = \sum_{i=1}^{n} (kk_i u_i(x_i) + 1),$$

where:

1. $u(\bar{x})$ is normalized by $u(x_1, x_2, \ldots, x_n) = 0$ and $u(x_1, x_2, \ldots, x_n) = 1$,
2. $u_i(x_i)$ is a marginal (conditional) utility function on X_i normalized by $u_i(x_i) = 0$ and $u_i(x_i) = 1$, $i = 1, 2, \ldots, n$,
3. $k_i = u(x_i, x_i)$,

and 4. k is a scaling constant determined by an interactive procedure given in Keeney (1976).

When the sum of the n scaling constants (the k_i's) is equal to one, the multiplicative form reduces to the additive model. This simplification is proven in Keeney (1976).

Thomas L. Saaty (1982) has pioneered an alternate method for evaluating the weights of multiattribute models using direct comparisons of attributes. This process is called the analytical hierarchy process. Saaty makes the comparisons and determines the weights by finding the normalized eigenvector associated with the maximum eigenvalue of the resulting matrix. If the assumption of additivity is valid, the weights

should be reasonable approximations of the intensity of preference of the decision maker. Furthermore, the analytic hierarchy process does not rely on the assumption of consistency demanded by the formal utility approach. Saaty calculates the degree of inconsistency and makes this known to the decision maker who can then alter the qualitative comparison to make the result more consistent.

While multiattribute utility analyses can incorporate large numbers of value attributes, it is nevertheless true that important considerations may be omitted by such analyses. Implicit in this argument is the belief that because human value judgments are typically based on large numbers of complex considerations, such omissions are likely to be common rather than rare. A large body of psychological research suggests, however, that the premise of this argument--that people commonly consider many factors in forming value judgments--is false. In the early and mid 1950's, Miller (1956) conducted a series of studies relating to basic human memory and judgment processes. He concluded that people are capable of actively coding and manipulating at most eight to ten (and usually fewer) "chunks" of conceptual information at any given time. Slovic and Lichtenstein (1971) concluded that in virtually every case, simple linear statistical models, incorporating three or fewer independent variables, explained over 80 percent of the system variance in the predictions or evaluations of individual experts. Shepard (1964) suggested that people accurately recall that they considered a large number of factors during the course of deliberating over an important issue, but fail to realize that they actively evaluated only a small number of factors at the real moment of decision.

Anderson (1974) and Slovic and Lichtenstein (1971), after reviewing the extensive literature on human prediction, evaluation, and choice, conclude that simple additive or multilinear models typically explain virtually all of the systematic variance in human judgment processes. While examples of more complex interactions between input dimensions have been observed, such interactions never account for more than a small fraction of the systematic variance in human judgment processes. Thus, the existing literature suggests that simple additive, multiplicative, or multilinear models will almost always provide an excellent approximation of intuitive human judgment processes, including intuitive assessments of the value of decision outcomes.

Anderson and others have used the functional measurement approach to study a wide variety of human judgment processes ranging from purely perceptual tasks (estimating the weights of pairs of objects) to evaluating multiattribute choice outcomes. Their findings have shown that over a wide range of contexts, human judgments can be very accurately represented by simple algebraic models. This literature suggests that simple algebraic MAU models of the type considered here have provided excellent approximations to human preferences in virtually every context studied by psychologists.

The Air Force has attempted in many studies to develop manpower planning models; however a search of the Air Force Manual 35-5 (1980) reveals no models currently accepted by the Air Force for such planning. All previous attempts did not have adequate statistical validity to be placed into general or special purpose situations.

Once a satisfactory method is developed for measuring productivity, initial psychometric tests must be conducted. A secondary purpose of this paper is to initially assess the validity of the productivity measure. Simply stated, validity is the extent to which any instrument measures what it is intended to measure. While there are several different types of validity measures, construct validation was chosen due to the lack of both criterion measures and the "acceptance of the universe of content" (Cronbach & Meehl, 1955, p. 282) in measurement of productivity. Indeed, productivity measurement is particularly elusive in many "white collar" work centers (Lockwood & Ludner, 1982). However, it could be argued that the method for deriving the measure provides a degree of content validity. It should be noted that criterion validity could be assessed in the future over an extended data set (period of time).

Construct validity is "concerned with the extent to which a particular measure relates to other measures consistent with theoretically derived hypotheses concerning the concepts that are being measured" (Carmines and Zeller, 1979, p. 23). Classically, one correlates a particular measure with a second measure which is linked theoretically to the same construct. If there is a strong positive correlation, a degree of support is provided.

Carmines and Zeller and others (Balch, 1974; Sullivan, 1974) suggest that the most critical requirement in determining construct validity is in establishing the theoretical relationship between the measures of the concepts. It follows that a strong relationship to more than one indicator enhances the construct validity.

Procedures

Developing the Factors

The procedures used to develop a productivity model followed the following general process:

1. select factors which drive the workload
2. weigh those factors as to relative importance as workload drivers
3. combine the weighted factors into a model
4. collect data to establish the overall model and
5. validate the model.

The senior executive officer determined that the chiefs of System Programs Offices (SPO's) under him would have the greatest impact on the development of the productivity measure. During the development of such a model as this, it is imperative that the top managers be committed to the components of, and use of such a model. It was also directed that only objective attributes be considered so the SPO's could not game the system as would be possible if subjective attributes were used. The only potential subjective consideration was predetermined to be the issue of complexity which would be applied at the highest decision making level. However, for the purpose of this validation, no subjective allowance for complexity was allowed.

The senior manager further directed a modified nominal group technique be used to insure that all SPO's participate, and that no participant would be criticized or treated negatively for his or her contribution. The process involves only minor time saving changes from the typical nominal group technique. The factors were quickly and fairly determined with representation from all key management.

Weighting of Factors

A weighting process was chosen because it provides a weight the decision maker will accept and assures consistency. The decision maker compared on paired comparisons on a 1 to 9 scale. Psychological research suggests that a 7 or 9 scale is the most favorable for making such comparisons. Other research suggests that paired comparisons are superior to ranking 3 or more at a time. Hence, if A is strongly preferred to B an entry in a matrix of 7 for A vs B, and 1/7 for B vs A. See the Appendix for an illustration of the process (Saaty, 1980).

After the matrix is formed, a computer program computes the maximum eigenvalue and its associated normalized eigenvector. This eigenvector represents the best weighting for the factors.

The consistency factor is computed by the formula:

$$CI = \text{Consistency Index} = \frac{\lambda max - n}{n-1}$$

RI = Random Index was determined for n by experiment and reported in Saaty (p. 31)

Consistency Ratio = CI/RI

If the consistency is greater than 1.00, then the decision maker has probably stated preference of the form $a < b < c < a$. Usually this situation will be quickly resolved. The procedure was programmed on the Tektronix 4054 with dynamic graphics. Dynamic graphics permits a grid with one blinking line to indicate which comparison is furthest off. If the consistency is between .1 and 1.0, the inconsistency may be only one of degree. That is if "a" should be strongly preferred to "b", and "b" is strongly to "c", then "a" should be very strongly preferred to "c". Often

the decision maker will say "a" is only strongly favored to "c". After the decision maker is satisfied with his or her weightings, a hard copy is made.

In this case, the weights for the participants within a SPO were averaged to get a composite weight for the SPO. Further, the four composite weights of the SPO's were averaged to arrive at an overall weight for the entire acquisition agency. The SPO's are assumed to be sufficiently homogenous to permit averaging.

Mathematical Model

The model for this study will value the following form.

$$P = \sum_{i=1}^{n} Ki\ Ui\ (Xi)$$

where P is the productivity value

Ki is the weight of attribute Xi

Xi is the value of attribute i

$U_i(X_i)$ is the marginal ability of Xi

The ability function, Ui(Xi), is assumed to be linear; therefore

$Ui(Xi) = AiXi$ where

Ai is a constant which associates the value 1 for Ui(Xi) where Xi is at its maximum possible value.

The factors were assumed to be related to productivity in a linear way. Further research might reveal otherwise for some, but the overall decision is not likely to change. The highest likely value of each item of raw data was assigned the value one, and the lowest raw value, which was zero in all cases, was assigned the value zero. The actual percent of this high value for each factor was used to compute a productivity measure.

The second assumption was that the weighted factor values were combined in an additive way. Research suggests that most of the variance in a decision can be explained by the additive model. This additive score reflects the overall productivity of the SPO or entire agency. No check of additive assumption was made due to the limited availability of the subjects.

Complexity is a subjective factor which may be applied by a knowledgeable decision maker before SPO comparisons are made. However, during the current validity assessment, no allowance was made for complexity to remove all subjectivity during testing.

Raw data is divided by the number of management personnel assigned to a System Program Office. This produces a raw value per person (RPP). In order to transform the data as described above, the RPP for each data input is divided by the highest likely value (or max) found in each series of data. This yields a percent of the highest value which is then multiplied by the weight to produce a productivity measure (PM).

Organizational Development Toward Enhanced Productivity

This issue of productivity measurement has had hightened attention at this organization for a three-year period. During that time, the organization had contracted with the Leadership and Management Development Center (the center for Air Force management consultation) for a continuing organizational development intervention. The immediate challenge was to determine and refine appropriate indicators of productivity. The consultation effort centered around a survey guided development program that provided direct feedback to all levels of supervision. A pictorial representation of the program is depicted in Figure 1 and briefly described below. Strategies included structured data feedback at the individual

supervisor level, 3-day seminars in the use of data for work group enhancement for all supervisors, required management action planning meetings throughout the organization over a 6-month period, and 5-day seminars targeted for project management.

The survey instrument that was the catalyst that the supervisors used to produce consistent change over time was the Organizational Assessment Package (OAP). This instrument has been in use by the Air Force since 1979. The various psychometric properties of the instrument have been well documented. It was designed jointly by the Air Force's research center (Human Resources Laboratory) and the consultation staff (Leadership and Management Development Center). Its development and initial factor analysis are found in Hendrix and Halverson (1979a; 1979b). Several investigations have addressed the instruments reliability and validity. Short and Hamilton (1981) found good test-retest reliability and strong internal consistency. Further, Short and Wilkerson (1981) provided a measure of construct validity. Finally, consistency of factor structure was demonstrated across functional work areas (Hightower and Short, 1982), and across time periods (Hightower, 1982). While other studies are in progress, all conducted assessments of the instrument have found the survey to have sound psychometric properties.

During the development of the previously described productivity measure, LMDC proceeded with a planned series of data gatherings as shown in Figure 1. The key measures from the OAP are further described in Appendix A. It is these measures that were independently obtained prior to computation of the "hard" productivity measure that were correlated using data for the overall organization across time. As suggested in the literature (Franklin & Drexler, 1977), the organizational behavior data

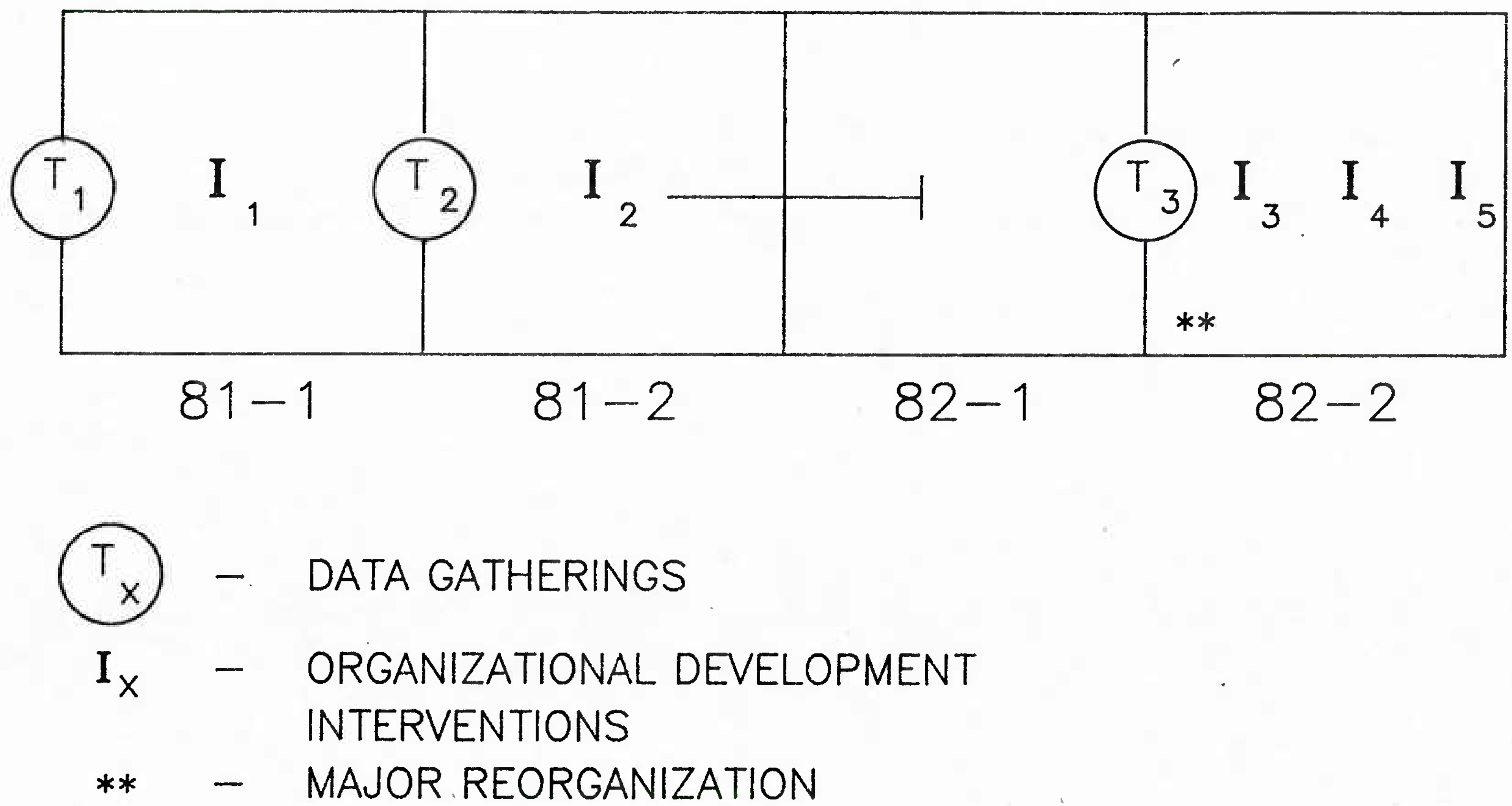

FIGURE 1. SURVEY DATA GATHERING AND INTERVENTIONS IN RELATIONSHIP TO FISCAL YEAR MEASURED PRODUCTIVITY DATA POINTS.

(Management-Supervision and Perception of Productivity) were correlated in a lead fashion with the outcome measures (measured productivity).

Specifically, as shown in Figure 1, Time 1 data were linked with fiscal year 1981-1 (1st half); Time 2 data linked with fiscal year 1981-2 (2nd half); Time 3 data linked fiscal year 1982-2.

RESULTS

Development Results

In Step 1 of the procedure, attributes were determined in a meeting of the SPO chiefs and the senior executive officers. Fourteen factors were identified as driving the workload of the acquisition agency. These factors are organized into old or existing contracts, new work in the current year, and out year work (Figure 2). Appendix B further develops the attributes by defining how the six month value of each should be computed. All SPO's used these standard definitions.

In Step 2, participants in the nominal group technique followed the weighting procedure to establish the weights shown in Table 1.

It should be noted that the last several attributes could be eliminated without changing the final decision. However, it was decided to keep all the attributes for psychological reasons, as well as potential future changes in model area emphasis. Additionally, some would object if they thought their manpower was based on only four or five factors.

Validity Findings

Based on the weighted factors, productivity measures were computed for the highest aggregated management level. These figures are shown in Table 2.

As described earlier, survey data were linked with measured productivity with an approximate 6 month lead. Measures of the corresponding lead Organization Assessment survey data are shown in Table 3. Therefore, since attitudinal measures were not available, measured productivity for the first half of fiscal year 1982 are not used in this analysis. However, it should be noted that the data appear to fit with a general notion that productivity was constantly enhanced during this two year period (Figure 3).

HIERARCHY OF FACTORS

FIGURE 2

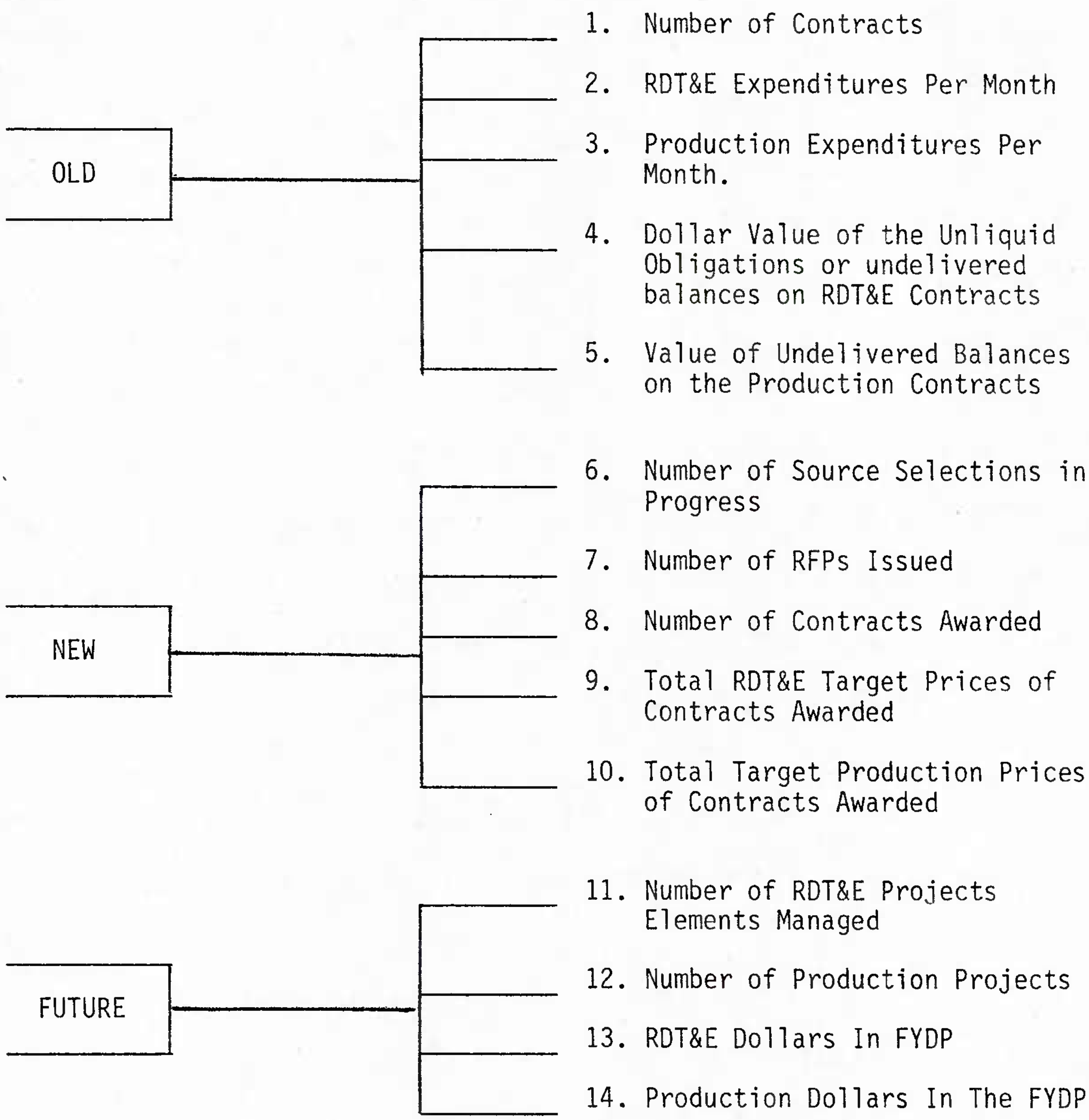

Table 1

Productivity Values

Using 1 Oct - 31 Mar FY81 Actuals
(Limited Sample)

FACTOR	WGT	MAX	RAW	RPP	PM
1	0.249	2.0	98.0	0.88	0.100
2	0.125	0.2	6.5	0.06	0.036
3	0.052	0.1	3.6	0.03	0.017
4	0.070	0.6	54.2	0.48	0.056
5	0.058	1.9	106.4	0.95	0.029
6	0.136	0.2	3.0	0.03	0.018
7	0.040	0.7	15.0	0.13	0.008
8	0.082	0.9	19.0	0.17	0.015
9	0.056	1.4	50.5	0.45	0.018
10	0.052	4.3	116.3	1.04	0.013
11	0.020	0.3	25.0	0.22	0.015
12	0.012	0.3	25.0	0.22	0.009
13	0.027	11.0	555.1	4.96	0.012
14	0.023	100.0	3164.3	28.25	0.006
TOTAL					0.326

NOTE: Dollars in Millions
112 Personnel Assigned

Table 2

Measured Productivity at the Highest Aggregated Management Level by Half Fiscal Years

Year	Measured Productivity
1981-1	.392
1981-2	.444
1982-1	.497
1982-2	.488

Table 3

Organizational Assessment Survey Data at the Highest Management Level

Time	Perceived Productivity	Management-Supervision
Sept 1980	5.33	4.76
April 1981	5.62	5.31
March 1982	5.78	5.49

Figures 3 and 4 show the general relationship of measured productivity with perceived productivity and management effectiveness. Pearson Product Moment correlations are displayed in Table 4. It should be noted that concurrent perceived productivity (as measured at the end of the 6 month data periods as opposed to 6 months lead) also correlates extremely well ($r = .947$).

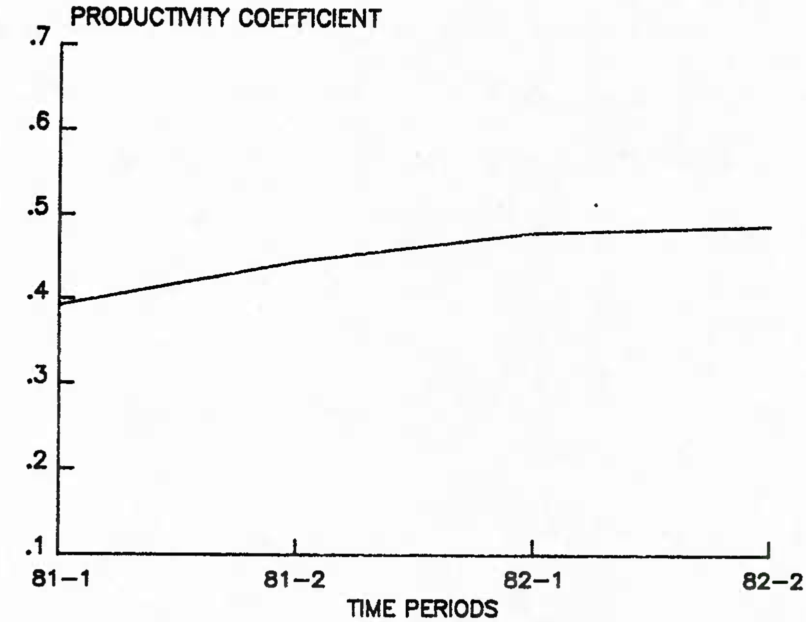

FIGURE 3. MEASURED PRODUCTIVITY ACROSS TIME (INCLUDING THE FIRST HALF OF FISCAL YEAR 1982)

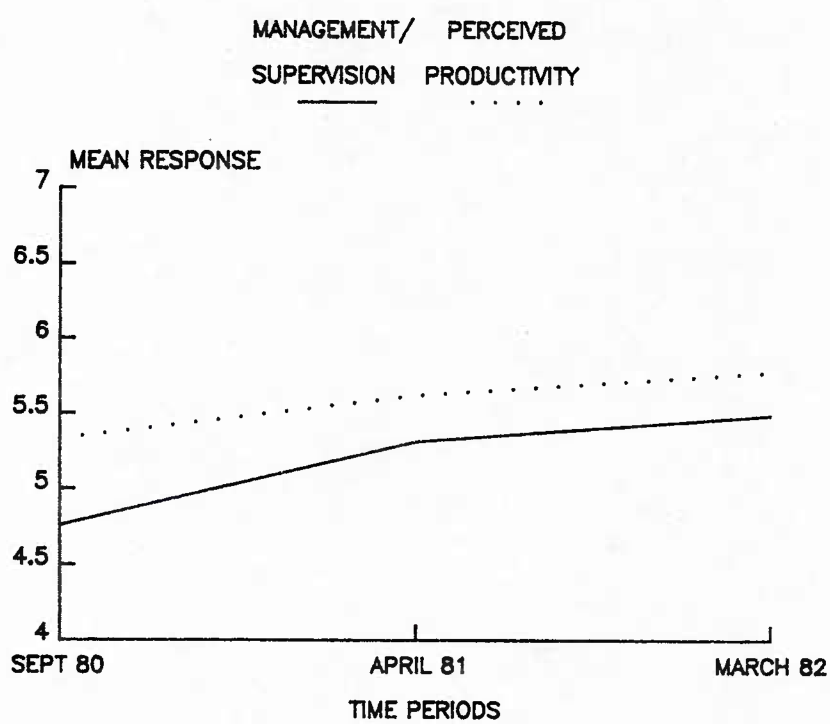

FIGURE 4. MANAGEMENT/SUPERVISION AND PERCEIVED PRODUCTIVITY ACROSS TIME.

Table 4

Correlations Between Measured Productivity
and
the Perception of Productivity and Management-Supervision

Index	Correlation Coefficient
Perceived Productivity (lead)	.993*
Management-Supervision	.972*
Perceived Productivity (concurrent)	.947*

*$p \leq .01$

Discussion

It was the intention of the authors to present a strategy for measuring productivity at a major development and acquisition organization, to provide an initial assessment of the validity of the measure, and finally, to present a methodology for determining productivity indicators in other areas that do not lend themselves to simplistic productivity measurement.

The initial validity assessment is extremely strong. According to Cronbach (1970) it is unusual for criterion validity coefficients to rise above .60. While we have used a construct validation, it is still accurate that any positive correlation indicates that predictions from the measurement are more accurate than guesses. While additional forthcoming data points will provide a stronger check of the validity, these initial data are encouraging.

This type measurement should have direct applicability to other development and acquisition organizations. More importantly, however, is the possibility of using the modified Analytic Hierarchy Process as a tool for determining productivity measurements in other "white collar" work centers. By acquiring the experience and input of the workers and management in combination with the logically designed Analytic Hierarchy Process, few systems will defy quantification, and thus control.

A potential problem of the described measurement indicator is the lack of direct measurement of effectiveness. Cook (1982) clearly summarizes the literature as requiring some balance in the equation between efficiency and effectiveness. Interestingly, the attitudinal measures (Perceived Productivity and Management-Supervision) both have direct links to effectiveness (i.e.," ... quality of output of my workgroup"; etc.)

Therefore, it is possible that the derived measure of productivity does indirectly capture a degree of effectiveness. Nevertheless, most models should have some indicator of effectiveness.

Further assessment of the validity of this particular measure is the logical extension of this paper. First, similar work can be conducted at the next level below this highest aggregate to begin assessing the validity by major program office. This will provide more understanding of the nature of the indicators, as well as the applicability at lower working levels.

Second, additional data points will soon become available. The validity data will be enhanced by further data points (this is not to say that the correlations will become more positive, rather that more credibility can be placed on a larger data set).

It should be noted that further practical assessment should be conducted at this agency. Since the process has been in use in excess of one year, designs could be developed to determine overall effectiveness, reliability and other forms of validity.

Finally, extended use of the AHP in other organizations merits investigation as many managers are faced with no sound alternative. As more experience is gained with these procedures, modifications can lead to a strengthening of the process. The cost benefit of a valid productivity measurement should be obvious. What remains is the future scrutiny of the new approach that may provide the key to productivity measurement in those "white collar" hard to measure work centers.

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APPENDIX A

Selected Organizational Assessment Package Scales

Management Supervision:

STATEMENT NUMBER	STATEMENT
58	My supervisor is a good planner.
59	My supervisor sets high performance standards.
60	My supervisor encourages teamwork.
61	My supervisor represents the group at all times.
62	My supervisor establishes good work procedures.
63	My supervisor has made his responsibilities clear to the group.
64	My supervisor fully explains procedures to each group member.
65	My supervisor performs well under pressure.

Perception of Productivity

STATEMENT NUMBER	STATEMENT
77	The quantity of output of your work group is very high.
78	The quality of output of your work group is very high.
79	When high priority work arises, such as short suspenses, crash programs, and schedule changes, the people in my work group do an outstanding job in handling these situations.
80	Your work group always gets maximum output from available resources (e.g., personnel and material).
81	Your work group's performance in comparison to similar work groups is very high.

APPENDIX B

ATTRIBUTE DEFINITIONS

FACTOR NO.	ITEM TITLE	DEFINITION

1 Number of Contracts — The number of contracts (C) are equal to total active contracts managed at the beginning of the fiscal year of (Cf) plus contracts awarded (Ca) during the fiscal year less contracts completed (Cc) during the fiscal year. A contract is completed when all items and data are delivered.

$$c = (Cf + Ca) - Cc$$

2 RDT&E Monthly Expenditures — RDT&E monthly expenditures (Me) are equal to total RDT&E expenditures (TRe) for the year, plus the total of other RDT&E expenditures (TOe) for the year, divided by 12.

$$Me = \frac{TRe + TOe}{12}$$

3 Production Monthly Expenditures — Production monthly expenditures (Me) are equal to total Production expenditures (TPe) for the year plus the total of other Production expenditures (TOe) for the year divided by 12.

$$Me = \frac{TPe + TOe}{12}$$

4/5 ULOs (RDT&E and Production) — The unliquidated obligations for RDT&E and Production funds are the difference of Obligations (Ob) and Expenditures (Eb) at the beginning of the year plus the difference of the anticipated Obligations (Oe) and Expenditures (Ee) for the end of the year divided by 2.

$$\frac{(Ob - Eb) + (Oe - Ee)}{2}$$

(ITEMS 6 - 10 DEAL ONLY WITH THE PRESENT FY)

6 Number of Source Selections In Process — The number of Source Selection in process are equal to the total number of source selections in process during the fiscal year. A source selection begins when AFSC Program Direction requiring source selection is issued. A source selection is completed when a contract is awarded. Down selection which requires SSEB and SSEC procedures are source selections.

FACTOR NO.	ITEM TITLE	DEFINITION

7 Noncompetitive RFPs issued — Total Noncompetitive RFPs issued are equal to the Total number of RFPs issued during the fiscal year. Restructuring an active contract may be included if a RFP is issued with new SOW, specifications, CDRLs, and delivery schedule. A MIPR sent is not a noncompetitive RFP issued.

8 Number of Contracts Awarded — The total number of contracts awarded are equal to the number of contracts awarded during the fiscal year. A MIPR sent is a contract awarded if the MIPR includes SOW, specifications, a CDRL, delivery schedule, CSSR or CPR reporting on cost based contracts, and terms and conditions; i.e., if a MIPR sent has all the elements of a contract the MIPR can be included as a contract awarded.

9 Total RDT&E target prices of Contracts Awarded — Total RDT&E target prices of contracts awarded are the sum of the target prices of all RDT&E contracts awarded including options during the fiscal year.

10 Total Production target prices of Contracts Awarded — Total target prices of production contracts awarded are the sum of the target prices of all production contracts awarded including options during the fiscal year.

11 Number of RDT&E Projects Managed — Number of RDT&E projects managed are equal to the total number of RDT&E programs, projects, and tasks requiring separate budget documents, reporting, and separate contracts. A RDT&E project implemented by a MIPR sent should be included.

12 Number of Production Projects Managed — Number of production projects are equal to the total number of production programs and projects requiring separate budget documents, reporting, and separate contracts. A production project implemented by a MIPR sent should be included.

13 RDT&E dollars in the FYDP — RDT&E dollars in the FYDP are equal to the total RDT&E dollars in the President's defense budget. The FYDP covers a five year period starting with the next FY plus four. (In the case of FY 82 the period was equal to FY 83 through FY 87).

14 Production dollars in the FYDP — Production dollars in the FYDP are equal to the total production dollars in the President's defense budget. The FYDP covers a five year period starting with the next FY plus four. (In the Case of FY 82 the period was equal to FY 83 through FY 87).